US Army Corps
of Engineers
Omaha District

Sustainable Buildings: Achieving the Gold LEED/SPiRiT Standards on a Tight Budget

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USACE, Omaha
District

US Army Corps
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Omaha District

Achieving LEED/SPiRiT "Gold"

THE Key to Success:

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TEAMWORK

Team Members:

Customer	Design Agent
Building User	PM
DPW office	Architect
DECAM	Site Planner
	Mech. Engineer
	Elec. Engineer
	Construction Rep.
	etc., etc.

Recent LEED/SPiRiT Projects:

LEED (Air Force)

- Missile Maintenance Facility, Minot AFB

SPiRiT (Army)

- FY ’05 Hospital Barracks Complex, Ft. Carson

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Missile Maintenance Facility, Minot AFB

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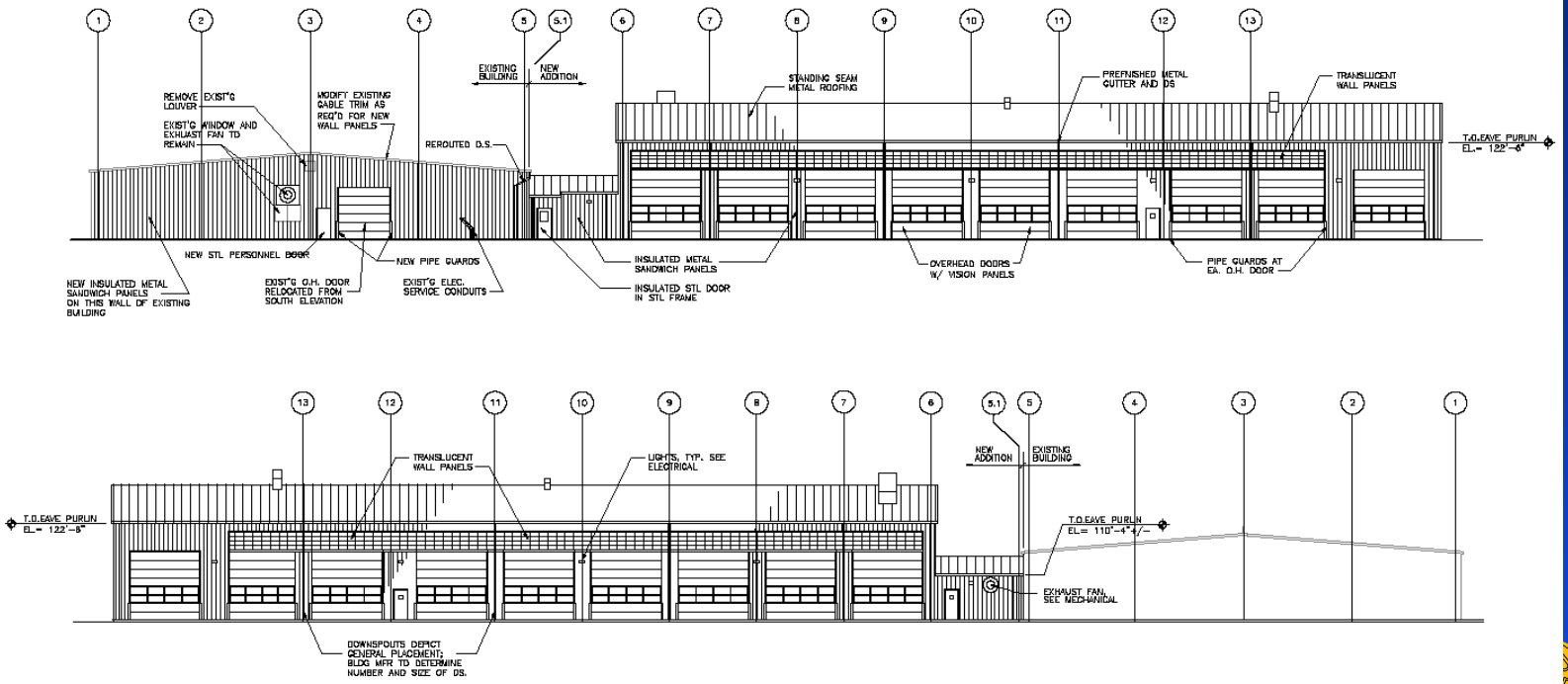
Missile Maintenance Facility, Minot AFB



Missile Maintenance Facility, Minot AFB

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Missile Maintenance Facility, Minot AFB

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Missile Maintenance Facility, Minot AFB

Yes	?	No	
18	6	45	**Project Totals** **69** Points

Certified 26-32 points **Silver** 33-38 points **Gold** 39-51 points
Platinum 52-69 points

NOTE: **HR** = Highly Recommended **R** = Recommended **CR** = Conditionally Recommended

Hospital Barracks Complex

Medical Barracks
Ft Carson

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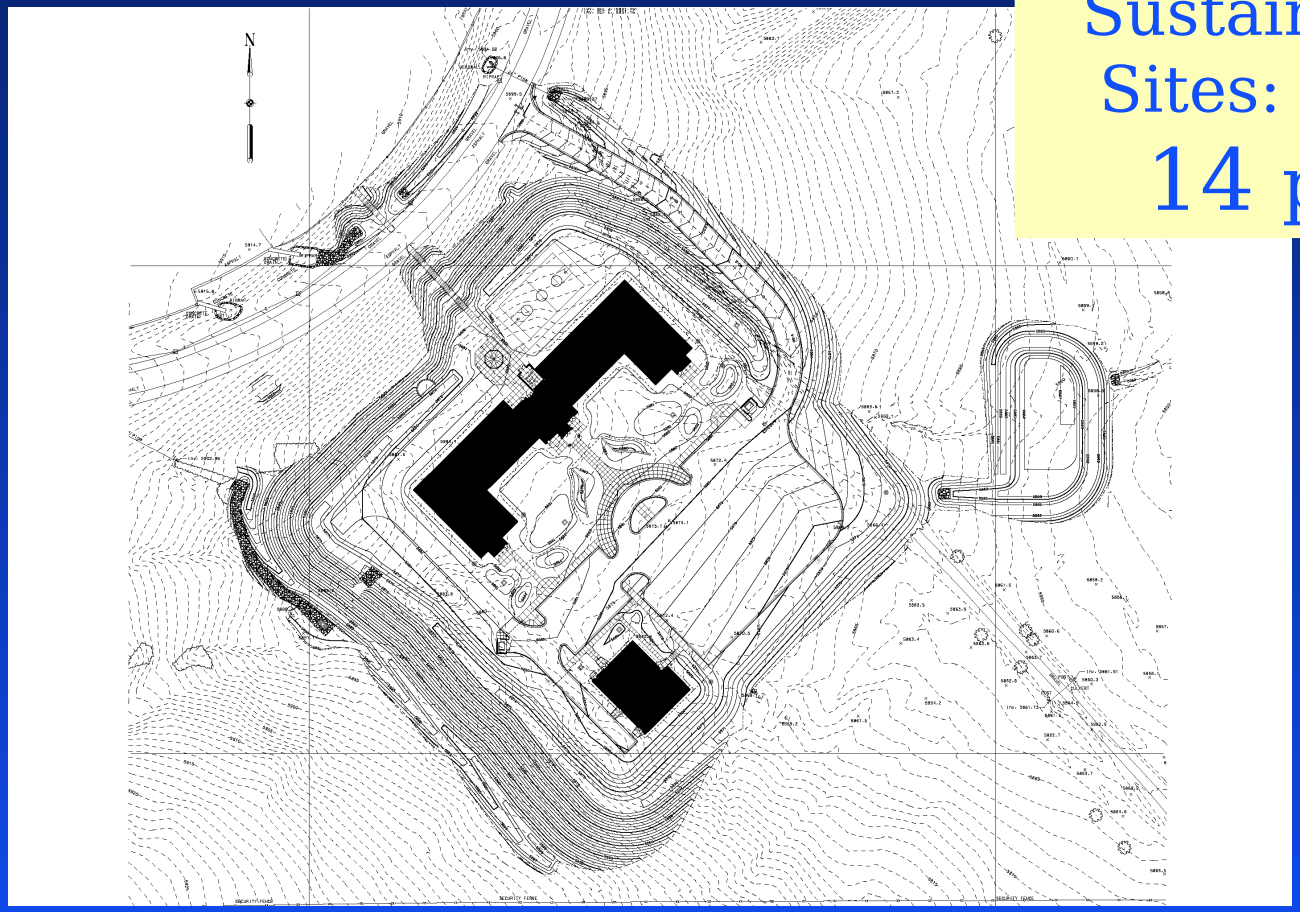
Hospital Barracks Complex



Sustainable Sites:
14 pts

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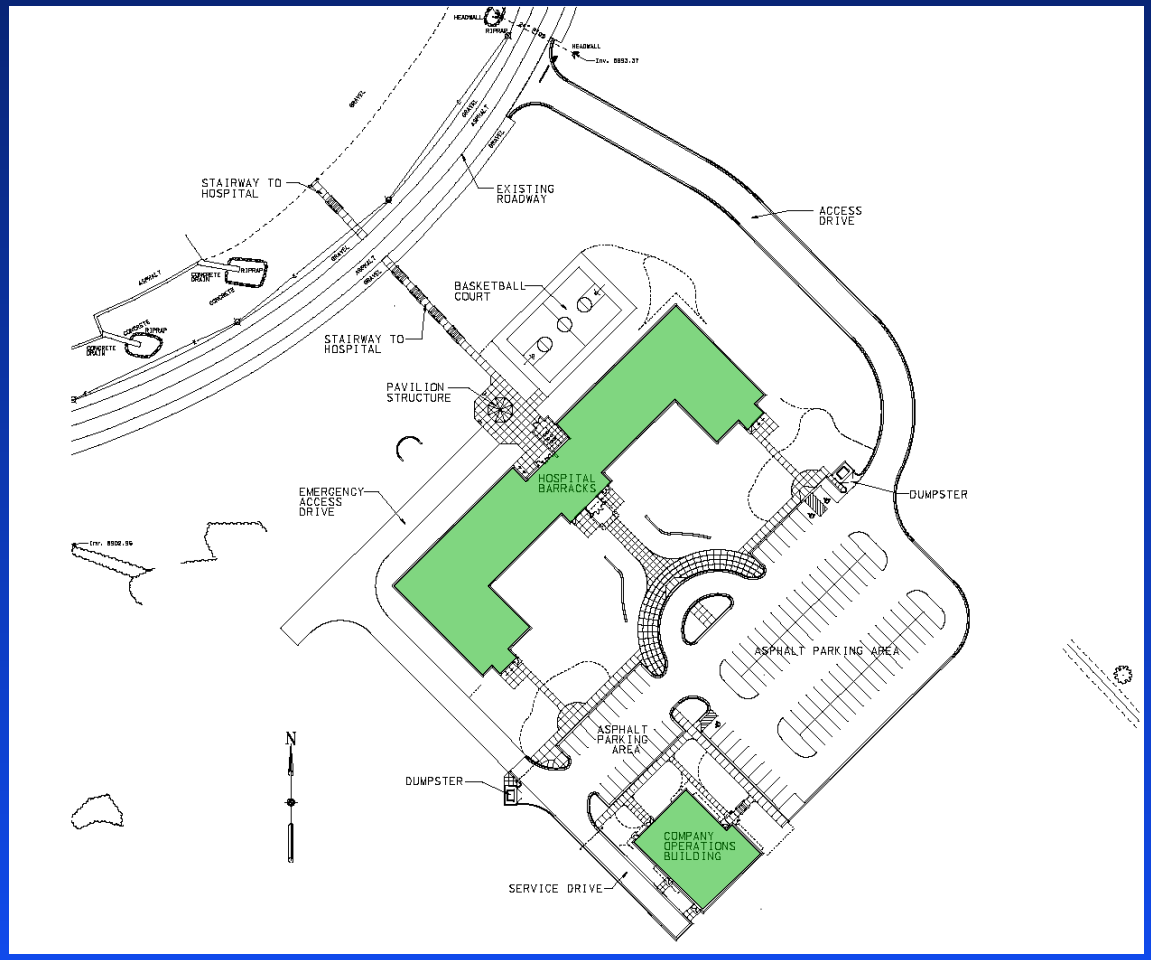
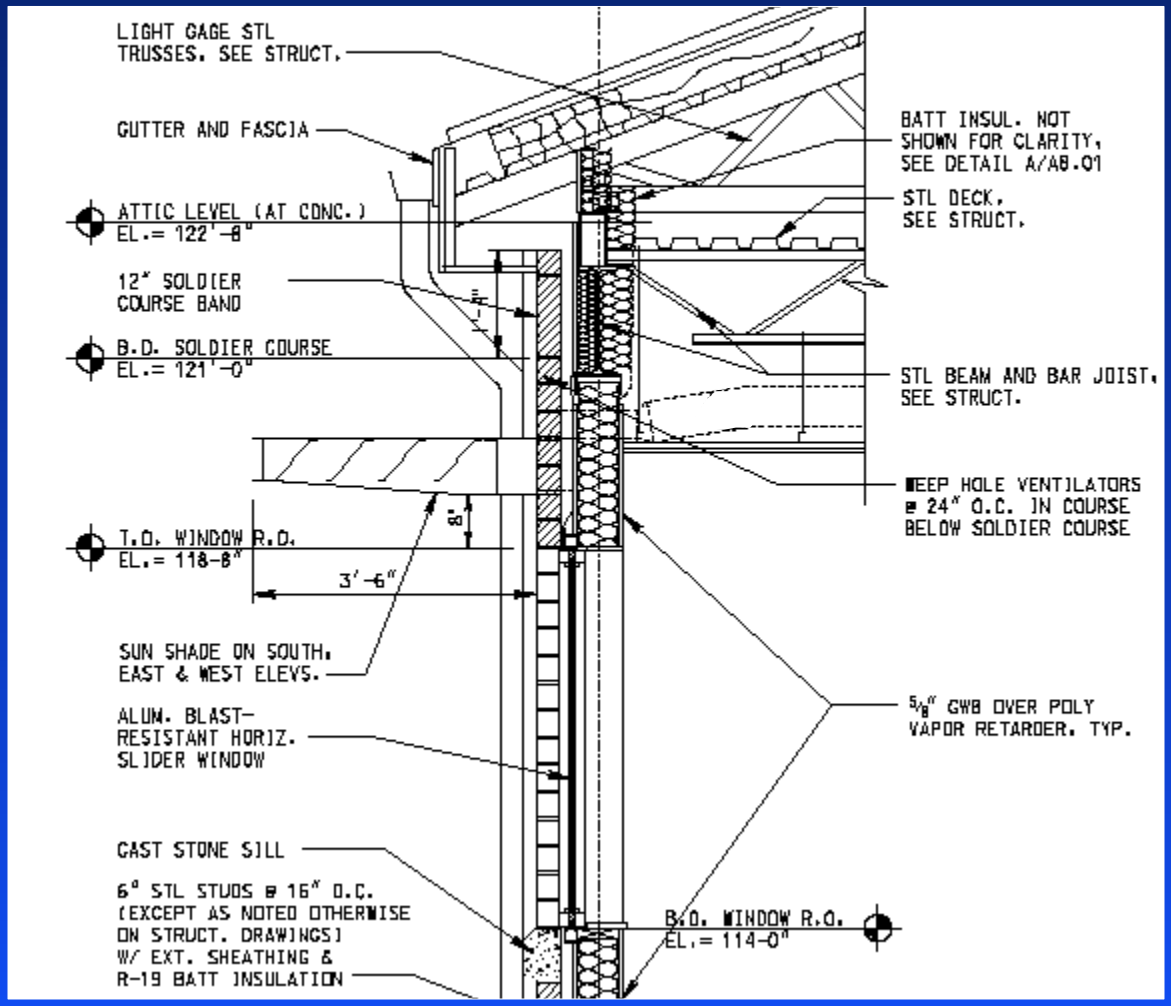
Hospital Barracks Complex



Hospital Barracks Complex


LIGHT GAGE STL TRUSSES. SEE STRUCT.
GUTTER AND FASCIA
ATTIC LEVEL (AT CONC.) EL.= 122'-8"
12" SOLDIER COURSE BAND
B.O. SOLDIER COURSE EL.= 121'-0"
T.O. WINDOW R.O. EL.= 118-8"
3'-6"
8"
SUN SHADE ON SOUTH, EAST & WEST ELEVS.
ALUM. BLAST-RESISTANT HORIZ. SLIDER WINDOW
CAST STONE SILL
6" STL STUDS @ 16" O.C. (EXCEPT AS NOTED OTHERWISE ON STRUCT. DRAWINGS) W/ EXT. SHEATHING & R-19 BATT INSULATION
BATT INSUL. NOT SHOWN FOR CLARITY, SEE DETAIL A/A8.01
STL DECK, SEE STRUCT.
STL BEAM AND BAR JOIST, SEE STRUCT.
WEEP HOLE VENTILATORS @ 24" O.C. IN COURSE BELOW SOLDIER COURSE
5/8" GWB OVER POLY VAPOR RETARDER, TYP.
B.O. WINDOW R.O. EL.= 114-0"

Hospital Barracks Complex

- **Facility Delivery Process**
- **Current Missions**
- **Future Missions**

Total: 55 pts = GOLD !

How do we achieve LEED/SPiRiT "Gold" on a Tight Budget?

Sustainable Project Rating Tool (SPiRiT)

Version 1.4.1

U. S. Army Corps of Engineers
U. S. Army Assistant Chief of Staff for Installation Management

June 2002

SPiRiT Points:

Bronze pts	**25 to 34**
Silver pts	**35 to 49**
Gold pts	**50 to 74**
Platinum	**75 to**

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100

Sustainable Sites 20
(- 4) = 16

Water Efficiency 5
(- 3) = 2

Energy & Atmosphere 28
(- 15) = 13

Materials & Resources 13 (-
8) = 5

Indoor Environmental Quality 17
(- 0) = 17

70

Facility Delivery Process 7 (-

Site Credit 3: Brownfield Redevelopment

Develop on a site classified as a brownfield and provide remediation as required by EPA's Brownfield Redevelopment program requirements OR Develop a brownfield site (a site that has been contaminated by previous uses).

Water Efficiency Credit 1: Water Efficient Landscaping

Use only captured rain or recycled site water for an additional 50% reduction (100% total reduction) of potable water for site irrigation needs, OR, do not install permanent landscape irrigation systems.

SPiRiT

Of the 100 possible categories available to achieve Gold (50 pts), at least 70 are attainable/viable.

Sustainable Sites			**0-$**
$$ $$$			
(16)	**8**	**8**	
Water Efficiency			
(2)		**2**	
Energy & Atmosphere			
(13)	**1**	**7**	**5**
Materials & Resources			
(5)	**3**	**2**	

Indoor Environ. Quality **0-$**

$$ $$$

(17) 7 7

3

Facility Delivery Process

(7) 7

Current Mission

(6) 4 2

Future Missions

Site Credit 1: Site Selection

Do not develop buildings on portions of sites that meet any one of the following criteria:
Prime training or maneuver land.
Land whose elevation is lower than 5 ft. above the 100 year flood as defined by FEMA.

1 pt.

$0

Site Credit 2: Installation/Base Redevelopment

Select site close to existing roads and utilities or use an existing structure to minimize the need for new infrastructure.

1 pt.

$0

Site Credit 4: Alternative Transportation

Size parking capacity to meet only minimum installation requirements AND provide preferred parking for carpools capable of serving 5% of the building occupants. Add no new parking for rehabilitation projects; provide 5% of the building occupants.

1 pt.

$0

Water Credit 3: Water Use Reduction

Employ strategies that in aggregate use 20% less water than the water use baseline calculated for the building (not including irrigation) after meeting Energy Policy Act of 1992 fixture performance requirements.

1 pt.

$0

Energy Credit 1: Optimize Energy Performance

Reduce design energy usage (DEU) compared to the energy use budget (EUB) in joules per square meter per year for regulated energy components as described in the requirements of Chapter 11 of the TI 800-01 (Design Criteria) as demonstrated by a whole building simulation. 1 point will be awarded for every reduction in design energy use of 2.5% for both new and existing facilities for a maximum score of 10 points.

10 pts

$$

Energy Credit 5: Measurement and Verification

Comply with the installed equipment requirement for continuous metering as stated in selected Measurements and Verification Methods Option B: Retrofit Isolation of the US DOE's (IPMVP) for the following:

- Lighting systems and controls.
- Constant and variable motor loads

1 pt.

$0

Material Credit 1: Building Reuse

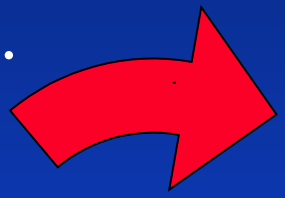
Maintain at least 75% of existing building structure and shell (exterior skin and framing excluding window assemblies).

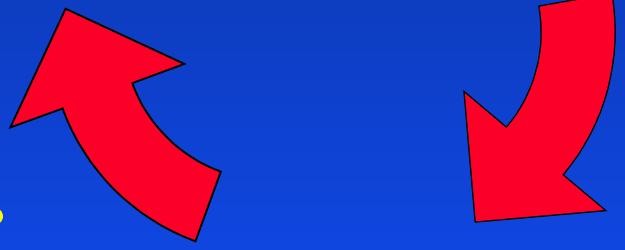
1 pt.

$0

Material Credit 2: Construction Waste Management

Recycle and/or salvage at least 50% (by weight) if construction, demolition, and land clearing waste.





1 pt.

$

Material Credit 5: Local/Regional Materials

Specify a minimum of 20% of building materials that are manufactured regionally within a radius of 500 miles.

1 pt.

$

IEQ Credit 2: Increase Ventilation Effectiveness

For mechanically ventilation buildings, design ventilation systems that result in an air change effectiveness (E) greater that or equal to 0.9 as determined by ASHRAE 129-1997. For naturally ventilation spaces, demonstrate a distribution and laminar flow pattern that involves no less than 90% of the room or zone area in the direction of air flow for at least 95% of hours of occupancy.

1 pt.

$

$

IEQ Credit 4: Low Emitting Materials

Meet or exceed VOC limits for adhesives, sealants, paints, composite wood products, and carpet systems as follows:

- Adhesives- meet VOC limits of South Coast Air Quality Management District Rule #1168, AND Sealants used as a filler- VOC limits of Bay Area Air Resource Board Reg. 8, Rule 51

1 pt.

$

IEQ Credit 4: Low Emitting Materials (cont'd)

3
pts

$

Facility Delivery Credit 1: Holistic Delivery of Facility

- Choose team leaders that are experienced in holistic delivery of facilities.
- Train the entire team in holistic delivery process.
- Identify project goals and metrics.
- Plan and execute charrettes with team members at critical phases of the facility delivery.

1 pt.

$0

Current Mission Credit 2: Soldier and Workplace Productivity and Retention

- Provide a high quality indoor environment to enhance user/occupant quality of life.
- Provide a highly functional work environment to promote user/occupant work productivity.
- Provide a healthy and safe work environment to sustain QOL and productivity.

1 pt.

$0

Future Missions Credit 1: Functional Life of Facility and Supporting Systems

- Identify how long the designed function is likely to occupy the current facility.
- …envelope, structure, HVAC,, and other systems are likely to last before requiring replacement or upgrade.
- …possible future uses of the facility.

1 pt.

$0